

THREE NEW HISPANIOLAN SPECIES OF *TABEBUIA* (BIGNONIACEAE)

Alwyn H. Gentry

Gentry, Alwyn H. (Missouri Botanical Garden, Box 99, St. Louis, Missouri 63166-0299, U.S.A.) Three new Hispaniolan species of *Tabebuia* (Bignoniaceae). *Moscoso* 5: 134-141, 1989. *Tabebuia bullata*, *T. vinosa*, and *T. zanonii* are described as new to science from the Dominican Republic.

Se describen tres especies nuevas para la ciencia —*Tabebuia bullata*, *T. vinosa* y *T. zanonii*, halladas en la República Dominicana.

Recent collections of *Tabebuia* from Hispaniola, mostly by Dr. Thomas A. Zanoni and associates at the Jardín Botánico Nacional "Dr. Rafael M. Moscoso", include the three new species described here.

1. *Tabebuia bullata* A. Gentry, sp. nov.

Type. DOMINICAN REPUBLIC. La Vega: Alto de Casabito, 13 km W of junction with Carretera Duarte (near Bonao), road to Constanza, 19° 01'N, 70° 30'W, 1140 m alt., 10 Apr 1983 (fl), *Gentry & Zanoni 50678* (holotype, MO: isotype, JBSD, MO).

Frutex vel arbor parva ad 6 metros. Folia 3-foliolata, foliolis obovatis vel oblongo-obovatis, ad apicem rotundatis, bullatis, infra venulis pilosis. Inflorescentia laxa paniculata, trichomatibus stipitato-peltatis. Calyx campanulatus, 5-lobatus, lepidotus et pubescens trichomatibus stipitato-peltatis; corolla alba, extra glabra. Capsula linearis, striato-costata.

Shrub or small spindly tree 2–6 m tall, branchlets thick, subtetragonal to subterete, flattened at nodes, densely lepidote when young. Leaves 3-foliolate, the leaflets obovate to oblong-obovate, broadly rounded at apex, sometimes inconspicuously emarginate or subcuspidate, the base cuneate to obtuse, the lateral leaflets asymmetrically oblique, (5–) 10–36 cm long, (2–) 4–23 cm wide, thick-coriaceous, more or less bullate, the veinlets, slightly impressed above, conspicuously and intricately raised below, glabrescently lepidote above, below pilose with stiff trichomes along the veinlets, the trichomes rather sparse and not impressed into areoles; petiolules 0.2–1.5 cm long, thick, lenticellate, the petioles thick and short, practically non-existent to 1 cm long, with conspicuous lighter lenticels, lepidote and minutely puberulous. Inflorescence terminal, openly paniculate, the stalked-lepidote trichomes as in *T. acrophylla*. Flowers with the calyx campanulate, irregularly ca. 5-lobed, densely lepidote and stalked-lepidote, 15–21 mm long, 8–12 mm wide, conspicuously longitudinally ridged, especially in

bud; corolla white or palest pink, tubular-infundibuliform, 5–8 cm long, the tube 4–6 cm long, 1.3–3.5 cm wide at mouth of tube, the lobes 1.5–2 cm long, glabrous outside, pilose in floor of throat inside; stamens didynamous, the thecae divaricate, 3 mm long; pistil ca. 2.5 cm long, the ovary linear, 5 mm long, 1 mm wide, densely minutely lepidote; disk annular-patelliform, 1.5 mm long, 4–5 mm wide. Immature fruit linear cylindrical, 6 cm long, 7 mm wide, longitudinally striate-costate, conspicuously refescent with sessile and stalked peltate scales.

Distribution. Endemic to upland forests in central Dominican Republic in Peravia, La Vega, and Santiago Provinces.

Specimens examined: DOMINICAN REPUBLIC. Prov. La Vega: 17 km S of Jarabacoa, road to Constanza, 1200 m, 10 Apr 1985 (st), *Gentry & Zanoni 50657* (JBSD, MO); Río La Palma, Constanza, 1000 m, 6–7 Jul 1973 (fl), *Liogier 19442* (JBSD); entre Loma La Sal y Loma La Golondrina, 19°04'N, 70°34'W, 3100 ft., 13 Apr 1982 (fl), *Zanoni et al. 19957* (JBSD, MO). Prov. Peravia: Arroyo Parra, La Vereda, 18°32'N, 70°28'W, 950–1000 m, 6 Apr 1985 (fl), *Gentry & Zanoni 50540* (JBSD, MO); Carmona road, 33 km N of San José de Ocoa, 18°38'N, 70°30'W, 1300 m, 6 Apr 1985 (fl) *Gentry & Zanoni 50533* (JBSD, MO); 12 km E of San José de Ocoa, 18°32'N, 70°28'W, 1150 m, 6 Apr 1985 (fl, fr), *Gentry & Zanoni 50551* (JBSD, MO); San José de Ocoa, Loma del Rancho, 1100 m, 18°31'N, 70°30'W, 8 Jul 1978 (fl), *Mejía 67* (JBSD); 9.8 km SW from Juan Aldian, 10 Jun 1980 (fl, fr), *Mejía & Zanoni 6818* (JBSD); 14.1 km N de San José de Ocoa, 1400 m, 18°38'N, 70°30'W, 7 Apr 1982 (fl), *Zanoni et al. 19862* (JBSD). Prov. Santiago: Loma Bajita, Distr. San José de las Matas, Yaguasa, open pines, 700–800 m, 10 June 1933 (fl), *Valeur 911* (MO, NY, US); camino desde Aguacate al sur, 570 m, 19°18'N, 71°19'W, 3 Mar 1982 (fl), *Zanoni et al. 19478* (JBSD).

Similar to *T. acrophylla* but differs conspicuously in white rather than red or purple-red flowers, larger more infundibuliform corollas, larger browner-drying strikingly ridged calyces and many-flowered openly paniculate inflorescences. The two species are also ecologically separated, *T. bullata* occurring at generally higher altitudes from 550–1200 m and *T. acrophylla* generally below 500 m. A single high altitude collection of *T. acrophylla* (*Liogier 17190* from 1700 m) has prominently ribbed calyces, approaching *T. bullata* (although black drying) suggesting that there may be introgression between the two species. Vegetatively *T. bullata* can be distinguished from *T. acrophylla* macroscopically by the different pubescence texture of the leaf undersides, gritty rather than soft; microscopically the sparser stiffer irregularly oriented trichomes of the leaf underside are quite distinct from

the shorter denser trichomes appressed into the areoli of the leaf undersurface of *T. acrophylla*. The flowers and inflorescences of the two species are so different as to make specific recognition of the white-flowered openly paniculate taxon unavoidable.

2. *Tabebuia vinosa* A. Gentry, *sp. nov.*

Type. Dominican Republic. La Vega: 11.6 km S of Constanza, 1880 m, *Gentry & Zanoni 50673* (holotype, MO, isotypes, JBSD, MO, to be distributed).

Arbor parva ad 6 metros. Folia (3–)5–7(–9) foliolata, foliolis obovatis, ad apicem rotundatis, lepidotis. Inflorescentia racemosa vel anguste paniculata, ferrugineopuberula, trichomatibus stipitato-peltatis sessilibusque. Calyx cupulatus, 5–dentatus vel bilabiatus; corolla vinosa, extra glabra. Cápsula linearis, longistrorsum costata.

Small rather rachitic tree or treelet 2.5–6 m tall, the branches terete with enlarged nodes, when young coarsely rufescent with lepidote and stalked lepidote trichomes, with a few large conspicuous lenticels. Leaves (3–)5–7(–9)–foliolate, the leaflets obovate to narrowly obovate, rounded or truncate at apex, cuneate to broadly cuneate at base, the terminal, 2.5–10 cm long, 0.8–6 cm wide, the basals (of 5) 2–7 cm long, 0.5–4 cm wide, if 7–foliolate, the lowermost pair smaller and often sessile, coriaceous, sometimes with a revolute margin, smooth to the touch above and below, typically drying slightly discolored, more reddish brown above and olive brown below, lepidote (sometimes in part lepidote-punctate) above and below, the scales small and reddish, rather scattered, conspicuously brochidodromous, the secondary veins plane or impressed above, prominent beneath, the tertiary veins plane above, plane or somewhat prominulous below; petiolules thickish, coarsely and somewhat glabrescently rufescent with lepidote and stalked-lepidote trichomes, terminals 0.5–1.5 cm long, the laterals mostly not clearly differentiated from cuneate leaflet base, the petiole thick, 1–7 cm long. Inflorescence terminal, several-flowered, irregularly racemose or narrowly paniculate, typically with subulate bracts up to 10 mm long subtending lateral branches or pedicel bases and subulate bracteoles up to 8 mm long in upper part of pedicel, the pedicels and bracts and rachis conspicuously coarsely rufescent with lepidote and stalked-lepidote trichomes. Flowers with the calyx cupular, irregularly shallowly 5–dentate to bilabiate, longitudinally ribbed, 11–20 mm long, 8–12 mm wide, drying dark, more or less rufescent with a mixture of sessile and stalked-lepidote trichomes; corolla deep wine-colored (white in *Zanoni et al. 28332*) with whitish trichomes in throat when fresh, rather narrowly tubular infundibuliform,

3–6 cm long, 0.8–2 cm wide at mouth of tube, the tube 2–4 cm long, the lobes 0.5–1.5 cm long, glabrous outside, inside densely pilose with long trichomes in throat and villous at level of stamen insertion; stamens didynamous, the anther thecae subexserted, divaricate, 3 mm long; ovary linear, 4–5 mm long, 1 mm wide, densely whitish lepidote; disk annular-pulvinate, 1 mm long, 3 mm wide. Fruit (only 1 seen) 8–9 cm long, ca. 11 mm wide, terete, lepidote, also with a very few short-stipitate lepidote trichomes, drying blackish, with several prominulous longitudinal ridges, subtended by the persistent calyx; seeds bialate, 7–9 mm long, 2.2–2.5 cm long, the hyaline-membranaceous wings sharply demarcated from the brown seed body.

Distribution. Endemic to the Cordillera Central of the Dominican Republic from (1000–) 1200–1900 m in altitude in mixed pine-broadleaf cloud forest, the highest altitude of any Hispaniolan *Tabebuia*.

Collections examined. DOMINICAN REPUBLIC, Prov. Azua: Loma Nalga de Maco, steep hard limestone, 1700–1800 m, 8 Jun 1926 (st), *Ekman H6296* (S.). Prov. La Vega: El Cajón, Pinar Bonito Road, 1850 m, 16–19 Oct 1981 (fl), *D. Dod s.n.* (JBSD); 10–11 km S of Constanza, 18° 50' N, 70° 45' W, 1730–1850 m, 10 Apr 1985 (fl), *Gentry & Zanoni 50664* (JBSD, MO); 11.6 km S of Constanza, 18° 51' N, 70° 45' W, 1880 m, 10 Apr 1985 (fl), *Gentry & Zanoni 50673* (JBSD, MO); Ciénaga de la Culata, 1700 m, 16 May 1959 (fl), *J. Jiménez 4008* (K); Alto Casabito, Bonaó, 1200–1300 m, 30 Mar 1974, *Liogier & Liogier 21491* (JBSD), 27 Mar 1977 (fl), *26613* (NY); Loma de Sal, Jarabacoa, 1200 m, 16 Jul 1975 (fl), *Liogier & Liogier 23631* (JBSD); 5.4 km S and 4.6 km W of Constanza, road to Pinar Parejo, 18° 50' N, 70° 45' W, 5750 ft, 24 Feb 1982 (fl), *Zanoni et al. 19387* (MO); 6 km de La Sal, 19° 4' N, 70° 34' W, 3600 ft, 14 Apr 1982, *Zanoni et al. 20082* (MO). Prov. Peravia: Loma de La Valva-coa, arriba El Guineal, 18° 28' N, 70° 22' W, 1300–1775 m, 14 Jul 1982 (fl), *Zanoni et al. 21623* (JBSD), entre Arroyo La Represa y Loma de Los Palos Mojados, arriba El Bejucal, 18° 37' N, 70° 35' W. 1200–1500 m, 4 Aug 1982 (fl, fr), *Zanoni et al. 22256* (JBSD), El Tope, Loma Rodríguez, 18° 26' N, 70° 18' W, 1320–1510 m, 29 Dec 1983 (fl), *Zanoni et al. 28232* (JBSD); Arroyo Parra, 12 km de San José de Ocoa, 18° 34' N, 70° 27' W, 1000 m, 30 Dec 1983 (fl), *Zanoni et al. 28332* (JBSD). Prov. Santiago Rodríguez: Monción, top of Monte Gallo, mossy forest 1825 m, 19 Jun 1929 (fl), *Ekman H12920* (S).

Perhaps most closely related to *T. domingensis* and to Cuban *Tabebuia bibracteolata*, differing from the latter in the stalked peltate trichomes not “decapitated” and in the smooth leaflets, not whitish to grayish below. It is most similar to *T. domingensis* of the Barahona Península from which it

differs in the conspicuous stalked peltate trichomes of the inflorescence, the thicker petiolules and broader thicker leaflets, and especially the conspicuous trichomes in the corolla throat. Some of the collections were identified as *T. revoluta* or *T. cf. revoluta* but it differs from that species in much larger flowers, broader leaflets, and the pilose inside of the corolla throat.

3. *Tabebuia zanonii* A. Gentry, sp. nov.

Type. DOMINICAN REPUBLIC: Los Haitises, Prov. El Seibo, Naranjo Arriba, en los cayos cercanos al poblado, 19° 05' N, 69° 34.5' W, 0–10 m alt., 28 Oct 1982 (fl), *Mejía & Pimentel 23957* (holotype, JBSD; fragm., MO).

Frutex vel arbor parva ad 7 metros. Folia 3–5–foliolata, foliolis oblanceolata-oblongis vel oblongo-ellipticis, ad apicem obtusis, infra plusminusve puberulis trichomatibus simplicibus. Inflorescentia paniculata, floribus paucis. Calyx campanulatus, irregulariter 2–4–labiatus, lepidota; corolla vinosa, extra glabra. Fructus ignotus.

Shrub or small tree 2.5–7 m tall, dichotomously branched; lepidote with reddish and/or whitish sessile or subsessile peltate scales, usually also sparsely puberulous with a few minute unicellular trichomes, more or less lenticellate when young. Leaves 3–5–foliolate, the leaflets oblanceolate-oblong to oblong-elliptic, obtuse to rounded at base and apex, sometimes apiculate, the terminal 5.5–16 cm long, 1–6 cm wide, the basals 2.5–12 cm long, 1.2–4.5 cm wide, coriaceous, the margins more or less erose, concolorous, olive brownish, rather sparsely peltate-lepidote above and below with uniformly sessile scales, always puberulous with minute single-celled trichomes at least along midvein below and sometimes (*Liogier & Liogier 24693*) over surface not noticeably rough to the touch, brochidodromous, the secondary veins plane or slightly impressed above, strongly raised below, the tertiary venation immersed but slightly prominulous below; petiolules 2–13 mm long, the laterals leaflets sessile or subsessile, the petioles 0.8–2.5 cm long, thick, minutely simple puberulous but apparently lacking any stalked-peltate scales. Inflorescence a reduced terminal panicle with several 2–3–flowered pedicels or reduced to a few separate flowers, lepidote with black peltate scales, these in part very short-stalked, the bracts and bracteoles linear, with at least a few long-stalked peltate scales with long flexuous bases. Flowers with the calyx campanulate, rather thin, irregularly 2–4–lobed, 10–11 mm long, 5–6 mm wide, densely lepidote with sessile and subsessile blackish peltate scales, drying blackish; corolla deep pinkish red to wine red, narrowly tubular-infundibuliform, 2.5–3.5 cm long, 0.7–1 cm wide at mouth, the tube ca. 2 cm long, the lobes ca. 0.5 cm long, papillose-ciliate,



Figure 1. *Tabebuia bullata* and *T. vinosa*. A—B. *T. bullata* A. Gentry. A. Habit (Gentry and Zanoni 50551). B. Flowers and inflorescence (Gentry and Zanoni 50533). C—E. *T. vinosa* A. Gentry. (Gentry and Zanoni 50673). C. Habit. D. Inflorescence. E. Front view of flowers showing subexserted anthers and long white trichomes in throat.

strongly papillose-puberulous in throat, the stamen insertions very sparsely villous, the anthers slightly included, divaricate, 2.5 mm long, pistil ca. 2 cm long, the ovary linear, 3–4 mm long, 1 mm wide, densely black lepidote-glandular; disk annular pulvinate, 1 mm long, 2 mm wide.

Endemic to Los Haitises, the karst limestone region on the south side of the Bahía de Samaná, near sea level.

Additional collections examined. DOMINICAN REPUBLIC. Prov. El Seibo: Los Haitises, La Manaclita, limestone crag, 2 Jul 1930 (st), *Ekman H15532* (B, S); una islita, Los Haitises, Bahía de Samaná, 23 Jan 1976 (fl), *Liogier & Liogier 24693* (JBSD); Los Haitises, la costa cerca la boca de Bahía de San Lorenzo, Cano Salado, 19° 05' N, 69° 28–29' W, 0–5 m alt., 9 Nov 1983 (st), *Zanoni & Pimentel 27903* (JBSD).

As here interpreted, this is a locally endemic species intermediate between *T. paniculata* of the Samana Peninsula and *T. buchii* of northern Haiti. Its leaves have minute single-celled simple trichomes (along with the numerous sessile lepidote scales) on the leaflet undersurfaces, at least along the main veins and sometimes over the whole surface. Thus the trichomes are exactly like those of *T. paniculata* but in that species they are restricted to the adaxial petiole surface and the base of the midvein above; in *T. buchii* there are trichomes over the leaf undersurface but these are much longer and mixed with long stalked peltate scales. The tertiary venation below is more prominulous than in *T. paniculata* but less so than in *T. buchii*, and the very slightly erose leaflet margins are also intermediate between the strongly erose ones of *T. buchii* and the entire ones of *T. paniculata*. The most distinctive feature of *T. zanonii* is its flowers which are smaller and narrow than in *T. paniculata* and are deep rose-red or wine-red rather than white to pale pink; presumably this reflects a switch from bee-pollination in *T. paniculata* to hummingbird-pollination in *T. zanonii*. *Tabecuia buchii* has longer, reportedly light pink flowers as in *T. paniculata* but these are more narrowly campanulate as in *T. zanonii*. Other distinctions between *T. zanonii* and *T. paniculata* are slightly included vs. deeply included anthers and a strongly papillose puberulous corolla floor and very slightly villose stamen insertions vs. nearly glabrous corolla floor and strongly villous stamen insertions. The relationship between *T. zanonii* and *T. paniculata* is very similar to that between *T. sauvalliei* and *T. calcicola*, in each case apparently reflecting a similar switch in pollination syndrome.

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